

Introduction

The Military Operations in Urban Terrain (MOUT) Advanced Concept Technology Demonstration (ACTD) will conduct its Culminating Demonstration (CD) during the Joint Contingency Force Advanced Warfighting Experiment (JCF AWE) in September 2000. Soldiers from the 2nd Battalion, 22nd Infantry Regiment, 10th Mountain Division and Marines from K Company, 3rd Battalion, 6th Marines Regiment, 2nd Marine Division will demonstrate the military use of approximately 25 products in the MOUT ACTD "kit." This article summarizes the programmatic path leading to this significant event.

Responding To An Urgent Need

The military has traditionally avoided fighting in cities because they are often the most complex battlegrounds facing U.S. forces. Line-of-sight restrictions, limited intelligence, densely constructed areas, and the presence of noncombatants limit the capabilities of current U.S. technology. These realities were brought home in October 1993 when the U.S. Army's firefight with Somali militia in Mogadishu left 18 Americans dead.

The MOUT ACTD began in 1997 in response to the Defense Science Board's 1994 study, *Military Operations in Built Up Areas*, which recommended an ACTD be undertaken to address the needs of U.S. troops in future urban combat. The objective was to improve the operational capabilities of dismounted infantry in MOUT through the integration of advanced technologies and tactics, techniques, and procedures (TTPs). This developed into a three-part mission: to evaluate advanced technologies to provide dominance in MOUT, to provide interim capabilities to operational units with TTPs, and to set the stage for rapid acquisition of successful technologies.

The MOUT ACTD is a joint Army and Marine Corps effort led by the Army Training and Doctrine Command (TRADOC). The MOUT ACTD is managed by the Dismounted Battlespace Battle Lab (DBBL), Fort Benning, GA; the Marine Corps Warfighting Lab (MCWL), Quantico, VA; and the Soldier



MOUT ACTD TO DEMONSTRATE NEW TECHNOLOGY AND TACTICS FOR URBAN WARFARE

Carol Fitzgerald, MAJ Richard E. Stockton,
and Sheila Ryan

Systems Center, U.S. Army Soldier and Biological Chemical Command, Natick, MA.

An Innovative Approach

To achieve its objectives, the MOUT ACTD centrally involved the warfighter from the beginning. In MOUT ACTD-sponsored workshops, soldiers and Marines experienced in actual MOUT deployments identified deficiencies where the ACTD could pursue technological solutions. These deficiencies were refined into a list of 32 requirements that included areas such as personal protection, powered optics, and portable methods to gain entry into buildings and structures.

Once the two Services agreed on and prioritized the requirements, a system integration team began searching for technology solutions. The global search focused on commercial and government

off-the-shelf technologies. The team identified more than 600 products through solicitation in the *Commerce Business Daily*, tradeshow attendance, Web searches, market searches, and a MOUT ACTD-sponsored Industry Day event.

Because of the diversity of both user requirements and candidate solution technologies, the MOUT ACTD team, in conjunction with the Institute for Defense Analysis, developed a technology assessment process to systematically evaluate each product and determine its military use "on paper." Each product was assessed against user-defined criteria for each requirement using commercial decision support software. All products then underwent qualification testing to determine if they performed as advertised; this limited the field to 230 products. Finally, the MOUT ACTD managers at DBBL and MCWL conducted an operational

“show and tell,” where 128 products were selected for evaluation in live force-on-force experiments. These experiments were conducted at the McKenna MOUT site at Fort Benning and the MOUT Collective Training Facility at Camp Lejeune, NC.

Determining Operational Utility

Beginning in January 1998, the MOUT ACTD executed 10 quarterly experiments (6 Army and 4 Marine Corps), each of which examined a subset of the 32 requirements mentioned earlier. These “vertical” experiments, which typically lasted 21-30 days, were designed to compare the technology candidates for each requirement, assess their technical performance, and determine if they were user-friendly to soldiers and Marines. The experiments included technical side tests and tactical force-on-force squad- and platoon-level vignettes evaluated against a baseline. Evaluation criteria included specific measures of performance for each requirement, user acceptance ratings, and training impacts. In the end, the analysis of collected data, combined with qualified military judgement, formed the basis for selecting technology products for inclusion in the joint experiments.

Sufficient time for training was also part of the experimentation process, including training to standard for base case situations, new equipment training (NET), and individual and collective tactical training. This ensured that the technology was evaluated strictly on technical merits, given proper field use.

Integrating The Best Technology

While the focus of 10 vertical experiments was on individual technology candidates versus requirements, the two joint Army and Marine Corps experiments were designed to test the collective mili-

tary use and interoperability of the 32 successful products as a “system of systems.” Joint Experiment 1 (JE1), a company-level experiment, was conducted at Camp Lejeune in July 1999, and Joint Experiment 2 (JE2) was conducted at Fort Benning in September 1999. Marines from G Company, 2nd Battalion, 8th Marines Regiment, 2nd Marine Division and soldiers from the 2nd Battalion, 22nd Infantry Regiment, 10th Mountain Division participated as experimental forces (EXFOR).

The joint experiments evaluated the collective military use of non-line-of-sight communications, intelligence gathering systems, weapon optics, night vision devices, door-breaching munitions, blunt training ammunition, and several other technologies. One measure used to determine a technology’s effectiveness as a system was the percent of casualties. As shown in the casualty summary below, the MOUT technologies system of systems dramatically improved the EXFOR performance.

Transitioning Technology

The success of any ACTD, including the MOUT ACTD, is determined by the amount of technology that is ultimately transitioned from the ACTD to the field. As such, the MOUT ACTD team has worked with several program management offices to facilitate the transition of promising technology to the soldier in the field. One such example is the Simon Breaching Launcher System, which is the solution to the door and window breach requirement. Shown in the photo on Page 15, this system was developed by Israel’s Rafael armament development authority; was transitioned to the Army Warfighter Rapid Acquisition Program; and is being executed by the Program Manager, Small

Arms as the Rifle Launched Entry Munition Program.

The Blunt Trauma Training Round technology has also been transitioned and approved as an FY01 Soldier Enhancement Program and is being executed by the TRADOC System Manager-Soldier. Additionally, the Shark Radio headset was transitioned to the Land Warrior Program for incorporation into the Land Warrior Version 0.6. Other nontraditional transitions include the modification of the joint Army/USMC Body Armor Operational Requirements Document to reflect capabilities of the Special Operations Command-developed body armor leveraged and used in the MOUT ACTD. Also, the MOUT ACTD has transitioned experimental operational lessons learned to the Center for Army Lessons Learned at Fort Leavenworth, KS.

Exploring The Way We Fight

From the outset, the MOUT ACTD not only looked at technology to address the urban warfare challenges, but also the TTPs that will maximize the tactical employment of the candidate technologies. In support of experimentation, the MOUT ACTD developed eight TTP handbooks that are being used by the 10th Mountain Division in its MOUT Leaders Combat Certification Course and are incorporated into Marine Corps Training Standards. These handbooks have also attracted the attention of other U.S. Army Forces Command units. Seven of the handbooks cover urban tactics from individual level to infantry battalion level and the eighth is the training support package for MOUT ACTD technologies.

CD Preparation

The MOUT ACTD will conduct the CD, its final formal event, during the MOUT portions of the JCF AWE that will

CASUALTY SUMMARY		
JE2	% Casualties EXFOR	% Casualties Opposing Force
Base Case	28%	55%
Experimental Case (with MOUT ACTD technologies)	17%	100%



A Marine fires the Simon Breaching Launcher System during the MOUT ACTD at Camp Lejeune.

be held at the Joint Readiness Training Center at Fort Polk, LA. The purpose of the CD is to confirm the collective military use of the MOUT ACTD system of systems at the battalion level and to finalize the composition of the residual package (discussed below). The MOUT ACTD is preparing for the event at a full-bore pace. Both the Army battalion and the Marine Corps company have completed NET and will continue to execute collective training events using the MOUT ACTD equipment through the spring and summer of 2000.

Interim Operational Capability

The technologies that demonstrate significant operational effectiveness during the CD, as determined by leaders of EXFOR units, will constitute the residual package. The residual package will be provided to the Army and Marine EXFOR for a 2-year extended user evaluation (EUE). This EUE is designed to provide the EXFOR an interim operational capability and additional data collection opportunities to further support technology transition and refinement of TTPs. Detailed planning for transition to the residual phase and EUE has been underway for 1 year.

Making A Difference

"In every way, the MOUT ACTD is a good news story. The primary focus of the MOUT ACTD is to enhance our warfighting capability in an urban environment at the tactical level," said BG Gary Speer, Assistant Division Commander—Operations, 10th Mountain Division. He added, "The evolving TTPs, equipment, and training manuals have already provided marked increase in unit capabilities. Already, the 10th Mountain Division has incorporated lessons learned from the MOUT ACTD into a comprehensive train-the-trainer MOUT course and platoon-focused training package that includes close-quarters marksmanship and TTPs for close-quarters combat; spreading urban warfighting skills to soldiers, squads, and platoons throughout the whole division."

Soldiers and junior leaders from the 10th Mountain Division have been involved in every step of the process from concept development and testing to assessment. "It has been a positive and professionally rewarding experience not only for the soldiers involved but for the entire division," said Speer. "The success of the MOUT ACTD to date is a direct result of the tremendous teamwork and

combined efforts of technicians, vendors, researchers, and soldiers. It is a great training opportunity to help shape, for the future, the way our soldiers will fight in an urban environment," he added.

CAROL FITZGERALD is the Technology Program Manager for the MOUT ACTD. She holds a B.S. in functional design and textiles from Cornell University, an M.S. in science and technology commercialization from the University of Texas in Austin, and has completed the Advanced Program Management Course at the Defense Systems Management College. She was named the Office of the Secretary of Defense 1999 ACTD Technical Manager of the Year and was awarded the Order of Saint Maurice from the National Infantryman's Association for her outstanding contributions to the infantry.

MAJ RICHARD E. STOCKTON is the Chief of the MOUT ACTD at DBBL, U.S. Army Infantry Center, Fort Benning. He holds a B.S. and an M.B.A. from Troy State University and is a graduate of the Command and General Staff College.

SHEILA RYAN, an employee of Battelle Memorial Institute, provides contract support to the MOUT ACTD. She holds a B.S. from the University of Massachusetts and is a major in the Massachusetts Army National Guard.
